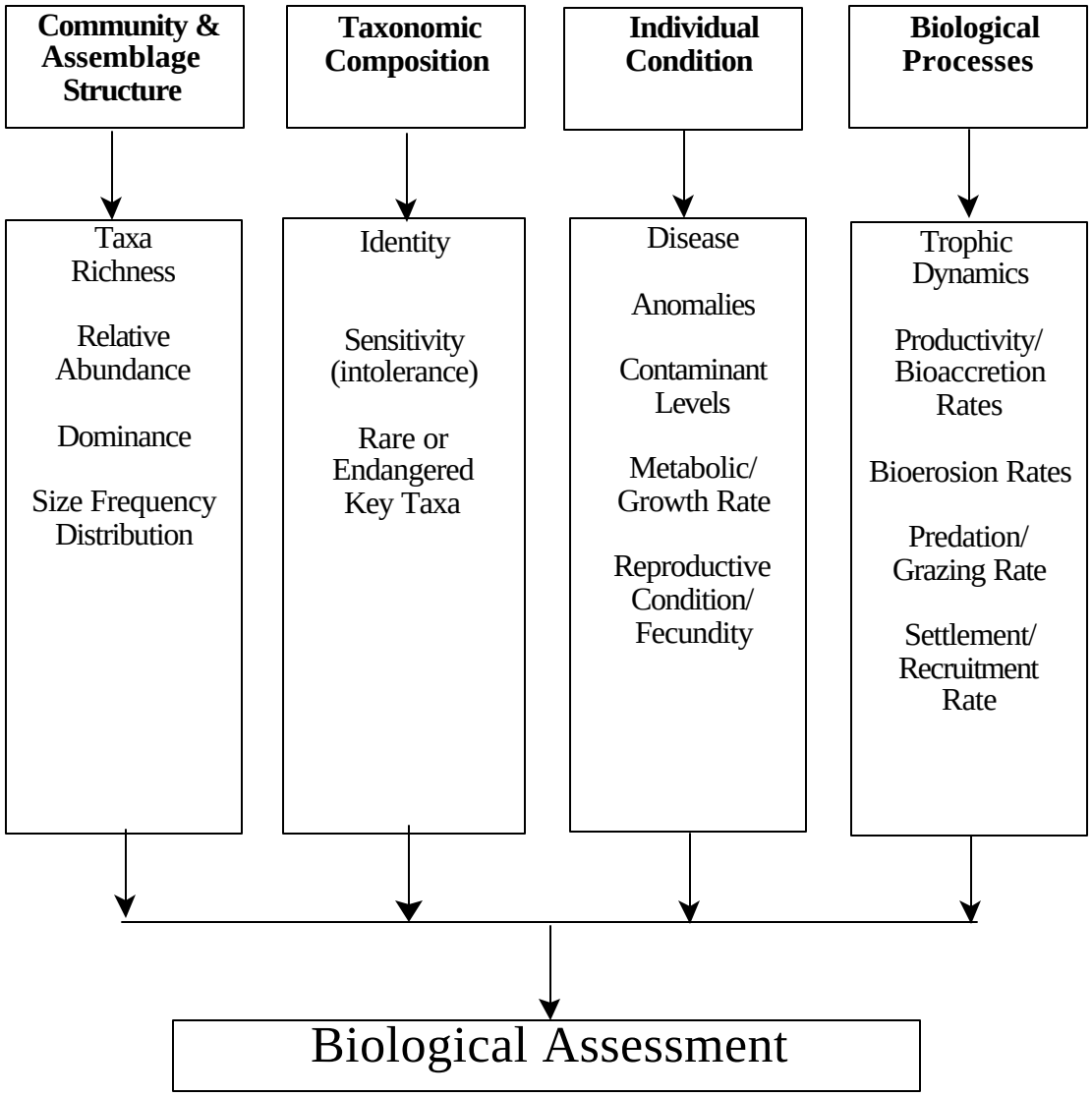
Figure 1. Framework showing the types of attributes that should be incorporated into coral reef biological assessment (adapted from Barbour et al., 1995).



Multimetric indexes avoid flawed or ambiguous indicators, such as diversity indexes or population size, and they are wider in scope (Karr and Chu, 1999). Diversity indexes are avoided because they combine richness and relative abundance; most IBIs, for example, include both richness and dominance metrics. Density or abundance measures are typically not used because of their high natural variation.

For a metric to be useful, it must be:

• Relevant to the biological community/assemblage under study and to the specified program objectives;

• Sensitive to recognized and unrecognized reef stressors;

• Able to provide a response that can be discriminated from natural variation;

• Environmentally benign to measure in the coral reef environment; and

• Cost-effective to sample.

Thus, metrics reflecting biological characteristics may be considered as appropriate in coral reef bioassessment and biocriteria programs if their relevance can be demonstrated, response range is verified and documented, and the potential for application in coral reef resource assessment programs exists. Tables 5-8 demonstrate that there is existing research that fits into every attribute within the coral reef bioassessment framework (Figure 1).